

# MARINE REVIEW.

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No. 11.

## Lake Coal Movement.

From the opening of navigation to Sept. 1, coal shipments to Lake Superior aggregated 1,671,387 tons, against 1,390,351 tons on the corresponding date in 1890, or a gain of 281,036 tons thus far this season. Shipments during August foot up 428,842 tons as compared with 362,768 tons in 1890, a gain for the month of 66,074 tons. These figures, compiled from the monthly statements sent out by the St. Mary's Falls canal officials, indicate that the coal movement, notwithstanding the delay on account of crowded docks at all upper lake ports, has been much heavier than was expected. It is not possible to separate hard and soft coal shipments in this canal statement, and there is no way in which accurate figures can be obtained regarding the total movement of coal to all upper lake ports, but it is certain that the great bulk of this gain in Lake Superior shipments, probably 75 per cent., is soft coal, as statements of hard coal shipments from Buffalo on Sept. 1, did not show a movement of more than 300,000 tons to all Lake Superior ports combined.

Receipts of anthracite coal at Milwaukee during August were 105,884 tons; bituminous 38,205 tons, or a total of 144,089 tons. The total receipts of anthracite during the season of navigation and up to Sept. 1, were 377,813 tons; of bituminous, 141,358, or a total of 519,171 tons. This is about 100,000 tons in excess of the receipts up to Sept. 1, last year. As nearly two months more of lake shipping remains, the total receipts for the entire season will probably pass the million ton point. These figures, covering Milwaukee's receipts, were prepared by ex-Harbor Master Trowell.

## Another Lake Michigan Obstruction.

Another dangerous obstruction, not noted on the charts, has been found on the Lake Michigan course followed by vessels in the Escanaba ore trade, and Secretary McKay of the Cleveland Vessel Owners' Association has begun correspondence with Col. Wm. Ludlow of Detroit with a view to having it removed or at least marked for the present. The spot was found by the steamer Roumania, Capt. R. J. Cowley, and that part of the master's protest referring to the location of the obstruction, will serve as a guide to other captains in the Lake Michigan trade. Capt. Cowley says: "We passed Poverty light between 3 and 4 a. m., August 29, steered east 2 miles, and then shaped our course N. E. by E. half E. for Squaw island passage. The weather was clear with no sea. We passed at least three miles from Squaw island on the westerly side, and could plainly see the island and the end of the reef. About 9 a. m., when about due north from the island and at least three miles from it, we struck an unknown rock where very deep water is shown on all the charts, knocking a hole under the bluff of our port bow. At the time we struck we had opened up the northwest point of Beaver island, past the easterly side of Squaw island, just far enough so that the easterly side of Squaw island bore due south from us, and we were on a direct range with the westerly point of Garden island and the northeast point of Beaver island. We sounded the pumps immediately and found 19 inches of water, steered south eight minutes, to see how fast water was making, and then headed due east, which course took us a quarter of a mile northward of the 18-foot shoal  $2\frac{1}{2}$  miles north of Garden island."

The remainder of Capt. Cowley's report has reference to his sinking boat, which was put into Duncan City, but it is import-

ant to note that part of the protest which says the Roumania was run south from the obstruction for eight minutes, with a view to keeping her toward shoal water while an effort was being made to learn her condition. Although headed toward Squaw island for this period of time and then put on an easterly course, she passed half a mile north of the 18-foot spot that bears about N. E. by E.  $\frac{3}{4}$  E. from Squaw island and is distant about  $4\frac{1}{2}$  miles. This shows that the obstruction is full 3 miles north of Squaw island. Capt. Boucher of the tug Duncan City, stationed at the port of that name, informs Capt. Cowley that he was with Gen. Mead while a survey was being made around the islands and he says that this obstruction was found at the time and that Gen. Mead was fully aware of its existence. Capt. Boucher says he can find the spot at any time. If such is the case, it is strange that the rock or obstruction of whatever kind it may be, is not marked on the charts.

## Government Vessel for Removing Obstructions.

Secretary McKay of the Cleveland Vessel Owners' Association has begun correspondence with a view to securing for the lakes a steamer that can be used for the purpose of searching for, and removing without delay, obstructions that are constantly being found in the different channels. He consulted the government engineers and has about reached the conclusion that the kind of boat required with the necessary equipment can be built for \$100,000, or less, and can be maintained for \$15,000 a year.

It is proposed to have a vessel about 165 feet long, 29 feet beam and of modern draft, say to load to 9 feet, and of double bottom, so that she would be safe in working around reefs and shallow places where such a craft would be needed. With the light draft, twin screws will be necessary for power and speed. A steam capstan and steam hoists with derricks should be provided at both ends of the vessel, and there should also be a wrecking pump of considerable capacity, two diving outfits and other devices which would be of great service, such as, for example, flexible augers and drills for boring and drilling under water, putting in dynamite charges, etc. Two steam cutters for sweeping for obstructions, a suitable outfit of small boats and one or two rafts of late design, which could be secured together and used as a floating platform, should also be provided. A vessel of this kind completely equipped would not cost more than the estimate given, and would be the means of preventing accidents that foot up in a single season many times more than the cost of building and maintaining such a craft.

## Over Fourteen Millions In New Ships.

Five naval vessels now under way at the shipyard of the Cramps, Philadelphia, foot up in length 1,900 feet, or over one third of a mile. The total displacement is 43,696 tons, the total horse-power of the engines is 76,000, which is equal to 25,080,100 pounds being raised 100 feet every minute, and the total contract price for all these ships is \$14,440,000. Assuming that each of these ships exceeds the contract speed by one quarter-knot, the Messrs. Cramp will receive the handsome sum of \$200,000 as a premium. To complete this enormous contract, an average number of 3,000 men will be required for at least four years. The vessels are one armored cruiser, the New York, two battle ships, the Indiana and Massachusetts, and two fast cruisers, Nos. 12 and 13, as yet unnamed.—Marine Journal.



### Lake Freight Situation.

After another period of advancing rates on grain, caused by a heavy movement of corn out of Chicago, the general freight market has again taken on a more steady tone, with ore freights a little lower than they had ruled during the early part of the week. In a few cases \$1.20 a ton was paid on Marquette ore Tuesday, and Escanaba tonnage was taken freely at \$1. The Marquette rate has since gone back to \$1.15, however, with shippers offering only 95 cents from Escanaba. Ashland did not share in the advanced rates brought on by the grain movement, and the nominal rate from that port is still \$1.15. There has been, of course, no tonnage secured from the head of the lakes for a week past at the rate quoted, as Duluth shippers of wheat have been taking all available vessels at  $3\frac{1}{2}$  cents, spot, or  $3\frac{3}{4}$  cents for anything arriving early next week. Ashland has not paid the advance, for the reason that the mining companies shipping from that port have kept the movement of ore well up to contract requirements, their sales being far below those of 1890 and present market conditions not warranting shipments of unsold ore. The same is true to a certain extent of shippers moving ore from other upper lake ports. If it were not for the grain, lake freights would be down to a much lower level, as the ore dealers seem satisfied in taking no risks on present indications in the iron market, although many of them might have sold double their present season's output at the prices that have ruled since spring. Furnacemen offer no inducements over the prices of the past several months, and it is evident now that if any benefit is to be derived by ore producers from the short season in ore and the limited shipments, it must come in next season's business. Still, the grain movement is more than meeting expectations, and the ruling rates out of Chicago and Duluth, together with the prospects of a steady advance on the northwestern wheat, gives assurance of very fair profits for the vessels.

In coal shipments the situation has changed wonderfully, and although an unusual number of boats have gone up the lakes light within the past few weeks, there is now little hope of high fall rates. For nearly a month past shipments have been restricted, on account of docks at upper lake ports being overcrowded, and still the movement of both hard and soft coal to Lake Superior, according to the St. Mary's Falls canal report, was on Sept. 1 more than 281,000 tons in excess of shipments on the corresponding date in 1890. Now the cars coming in with grain from the northwest are relieving the receiving docks to some extent but there is delay in getting soft coal from the mines. As a result, soft coal is scarce and the 50-cent rate to Lake Superior could probably be reduced if an effort was made in that direction. Some of the big shippers have vessel contracts at 50 cents running through the season, however, and they are not desirous of helping their competitors to get cheap coal on account of a reduced lake freight. Lake Michigan shipments of soft coal, especially to Chicago, are probably not as well advanced, but freights in that direction are still dull at 50 cents to Chicago, Milwaukee, Manitowoc and Green Bay and 45 cents to Escanaba and Gladstone.

Our Chicago correspondent says of the grain situation: "The corn clique, by its bad tactics in moving its grain, donated a large sum of money to the marine interests. When the leaders of the clique—whoever they may be—decided to start the corn towards the rising sun, they gave the handling of it to four big shipping houses. The people who were all working for the same master fell over each other to get boats. They bid the rate to 3 cents for corn with hardly a stop. If the grain had been placed with one house, some advance would have been obtained by vesselmen, of course, but they would not have had things their own way. What a boom it was! I have never seen anything like it in the vesselmen's aisle on 'change. One agent took 850,000 bushels of wheat and corn for boats to arrive in two days. You could not talk with an agent three min-

utes without being interrupted by shippers asking for boats. It was felt Monday that the market could not stand the fleet headed this way, but Tuesday's grain receipts were large, and vesselmen were more confident. It is likely that the week will show the heaviest grain shipments in the history of the city. Any depression can now be but transitory. The west is filled with grain headed for Chicago. Railroad tracks are kept warm by the moving trains."

### Work for the Ship Builders.

In addition to a contract just secured from Mr. McBrier of Erie and Capt. John Mitchell of Cleveland for a wooden steamer, it is probable that F. W. Wheeler & Co., of West Bay City, will close negotiations now pending with the owners of the steel steamer Emily P. Weed of Buffalo for a duplicate of that boat. This with a passenger propeller for the Graham & Morton Company of Chicago, which now seems assured, and four government lightships already under way, will give the West Bay City yards employment during the coming winter, Capt. James Davidson having also begun work there on a big wooden steamboat. Mr. M. A. Bradley says that the Cleveland Ship Building Company has given him a fair price on the steel tow barge which he proposes to build, and he will order work begun on the boat shortly, if the ship building company, in which he is largely interested as a stockholder, does not secure other contracts. The wooden boat which F. W. Wheeler & Co. will build for Mr. McBrier, and Capt. Mitchell will be a duplicate of the steamers Tampa, Iosco and Sauber, built at the same yard within the past few years, and one of which, the Sauber, is controlled by Capt. Mitchell. The dimensions of these boats are 291 feet keel, 312 feet over all, 41 feet beam and 24 feet hold. They have triple expansion engines and their general equipment is equal to the best wooden boats afloat. The owners of the Emily P. Weed are very well pleased with their boat, which was also built by Wheeler & Co., and it is mainly on this account that they now contemplate duplicating her. It can well be said of the Weed that, although not quite as large a carrier as some other boats of her size, she is as well built as any steel boat ever turned out of a lake ship yard.

### New Trouble at the Canal.

The accident to the steel steamship Wawatam of the Lake Superior Iron Company's fleet, through which she sustained a hole in her bottom, presents a new difficulty at the Sault canal. In a report forwarded to Gen. Poe, Capt. Mooney says: "When about half way down the canal, above the lock, coming in on Tuesday morning the 1st. inst., and while making a landing with a stern line out to make fast until our turn came to lock through, we grounded heavily on the bottom of the canal, punching a hole in the boat amidship on the starboard side and filling the midship compartment on that side. The cause of the accident was the drawing off of the water to fill the lower lock, which resulted in the water in the canal dropping about a foot. I think a good plan would be to have the canal officials hoist a signal at the canal office notifying vessels coming down under such circumstances. Vessels coming down and drawing water to fill the lock are subjected to damage from this source, unless they are made fast, as the drawing off of the water makes quite a current running down towards the lock."

The plant used on the Manchester ship-canal, England, consists of ninety-eight steam excavators, eight steam dredges, 173 locomotives, 6,300 trucks and cars, 228 miles of single track railway, costing about \$3,150 per mile, 124 steam cranes, 192 portable and other steam engines, and 212 steam pumps of all sizes. The maximum laboring force was 17,000 men and boys and 200 horses. The coal consumed amounted to 10,000 tons per month. The total excavation was about 46,500,000 cubic yards, including 10,000,000 cubic yards of sandstone rock.



### This Season's Trade Will Equal That of 1890.

Notwithstanding a delay of nearly two months in the opening of navigation last spring, it is more than probable that the season's business in the aggregate will be about equal to that of 1890. The Sault canal records show that the freight traffic through the canal up to September 1 is 92 per cent. of the same for last season. Larger and faster vessels, the big grain crop and other conditions will serve to make the volume of business in six months this season equal that of seven and a half months in 1890. The traffic through the Sault canal during August was larger than ever before in the history of the canal for one month. Of steam vessels 1,229 passed through, of sail vessels 434, and of rafts and unregistered craft 57, a total of 1,720. The total registered tonnage was 1,460,144, total freight tonnage 1,545,607, number of passengers carried 8,099. The total number of lockages was 828. The increase in traffic over the corresponding month in 1890 was, in registered tonnage 207,366, freight tonnage 134,313, passengers 327, passages 165. It exceeds the traffic for the previous largest month (July, 1891) by 16,054 net tons, although the number of vessels passing and the registered tonnage was slightly less than during that month.

The tonnage movement through the canal was divided as follows:

Description.	East-bound	West-bound.
Coal.....		428,842 tons.
Flour .....	553,475 bbls.	100 bbls.
Grain.....		27,000 bu.
Corn.....	152,501 bu.	
Wheat.....	1,542,325 bu.	
Building Stone.....	5,631 tons.	
Copper .....	8,648 tons.	
Manufactured iron.....		3,980 tons.
Iron, ore.....	826,738 tons.	
Iron, pig.....	6,301 tons.	
Salt.....		29,291 bbls.
Lumber.....	60,452 M feet.	
Unclassified freight.....	10,000 tons.	43,871 tons.
Passengers .....	3,848	4,251

No silver ore was shipped east by water during August although there is usually a fair movement in that mineral.

### Bad Spot Near Grosse Point.

In the fall of 1889 the steamer Chemung struck an obstruction in Lake St. Clair and sustained serious damages. It is now more than probable that damages recently sustained by the steamers Corona and Hudson were caused by the same obstruction, although there is little use of masters trying to avoid it from the description of the locality furnished, as it is directly in the channel leading to Grosse point light-ship and any of the deep laden steamers may be unfortunate enough to run onto it at any time. The master of the Hudson, whose boat broke her wheel on the obstruction a short time ago, says that when the accident occurred he was bound down Lake St. Clair and about fifty minutes out from the canal, steering S. W.  $\frac{1}{2}$  S. He locates the wreck or sunken log, as he calls it, N. E.  $\frac{1}{2}$  N. from Grosse point light-ship.

An extract from the log of the Chemung, says: "Entered St. Clair canal 10:30 a. m.; checked very slow, water being low; clear of the canal 10:48 a. m.; shaped course S. W.  $\frac{1}{2}$  S. The wind was southwest, light with fog. The engine was then making 45 turns a minute; 11 a. m. engine was making 62 turns a minute. At 11:25 the fog lifted and we made Grosse point light-ship on our starboard bow. We hauled S. W.  $\frac{3}{8}$  S., heading into it, and at 11:35 a. m. struck bottom forward."

It will be seen that the extracts from the logs of both vessels are very close to being alike as to the location of this obstruction, but a sunken log or a small portion of a hull of some kind can not be found from the directions given, unless it is by sweeping in the vicinity. Gen. Poe and Commander Heyerman will probably follow this plan in an attempt to find the spot, as an effort on the part of Commander Heyerman with the light-house steamer Marigold has failed. Many of the Cleveland vessels carry buoys to be thrown overboard when an obstruction of this kind is encountered and they should be carried on all vessels. Any kind of a mark will do temporarily.

### Before the Inspector.

EDITOR MARINE REVIEW:—In my last communication, dealing with that which may be expected by the lake engineer who seeks a license from any of the coast representatives of the steamboat inspection service, I referred to the surface condenser, but I have since been asked why I didn't give more details in regard to it, as that is one of the principal points that lake engineers are not familiar with. Where feed water is taken from a surface condenser it is best to allow a thin coating of scale, about as thick as letter paper, to form on the internal surfaces of the boiler. This scale protects the metal of the boiler from the pure distilled water which has a tendency to attack the metal and develop pitting and internal corrosion; a tendency which is heightened by the cylinder oil that goes in with the feed water.

As a few of our engineers have learned to their sorrow, this oil in itself is a dangerous element in boilers. The oil and other foreign matters precipitated within the boiler combine and form cakes which eventually sink and adhere to the tubes, or furnace crowns, thereby preventing the water from coming in contact with the metal, and the result is a burned and blistered plate, or possibly an explosion. The collections of oil are more dangerous in boilers using fresh water than where salt water is used, as the gravity of fresh water being less than salt water the cakes or slugs of foreign matter will sink sooner; and then, as I mentioned in my last article, the salt has a tendency to cut up and granulate the heavy collections of oil.

Where surface condensers are used it is also a good plan to dissolve 15 or 20 pounds of sal soda and put it through the condenser and into the boiler frequently; and especially just before blowing off. The sal soda causes the oil to saponify, or become soap, and it can be more readily blown through the surface blow pipe.

Another cause which hastens the pitting and grooving in boilers connected with surface condensers, is the brass tubes in the condenser and the copper pipes in connection with the feed pumps, which together with the water form galvanic action, the water acting as a conductor. To counteract this galvanic action, slabs or pigs of pure zinc are suspended within the boiler. As a result, the zinc is attacked instead of the iron, and it wastes away very rapidly and requires to be frequently renewed.

It is well to become familiar with the care of boilers using water from surface condensers, as the inspector will undoubtedly ask you in regard to this.

It is also well to remember that latent heat is heat that does not affect the thermometer, and which expands itself in changing the nature of a body, such as turning ice into water and water into steam.

Bodies get latent heat when passing from a solid to a liquid, or from a liquid to a gaseous state.

Latent heat can be recovered by bringing the body from a gaseous to liquid, or from a liquid to a solid state.

A thermal unit is the heat necessary to raise the temperature of one pound of water from 39° to 40° Fahrenheit.

Water is at its greatest density when its temperature is 39° Fahrenheit. It expands if either heated or cooled from that temperature. The meaning of zero is empty or nothing, and when applied to temperatures absolute zero means no heat. It is the temperature at which gases would become solids, as water becomes ice. Absolute zero is 461.22° below Fahrenheit's zero. All bodies contain heat when above that temperature.

It may seem to some that these things do not come under the head of practical engineering, but they are all among the things regarding which the inspectors propound questions, and they tend to show whether a man takes interest enough in his profession to study the subjects pertaining to it.

The time has arrived when it is necessary for marine engineers to have a smattering of science, and those who will not acquire it have no one to blame but themselves. Steam engineering has received more attention from capable writers than any other trade or profession in existence, and the man who will not avail himself of opportunities to acquire a knowledge of the scientific as well as the practical branch of his profession can already see himself dropping behind in the race for success.

Cleveland, Ohio, Sept 8, 1891.

F. B. SMITH.

The list of vessels to which the bureau of navigation assigned official numbers during the week ending Sept. 5 contains only one lake craft, the yacht Gertie of Detroit—8.16 tons gross, 7.76 tons net, No. 86,169.

Some boilers recently made in Pittsburgh are 10 feet diameter and 30 feet long with 234 flues, 4 inches diameter 30 feet long. The shells are of steel one inch thick, and it is claimed they are the largest ever made in Pittsburgh. The rest of the country may as well be included. The boilers of the Australia made here contain about the same capacity, 2000 cubic feet, and were believed to be the largest ever made in this country at the time, two years ago.—Journal Industries, San Francisco.



## CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,  
No. 210 So. Water Street, CHICAGO, Ill., Sept. 10.

In the REVIEW two or three weeks ago there was an article about handling grain on the Pacific coast as it is handled on the lakes. It can't be done, you know. Grain cannot be shipped under the equator in bulk without heating, and so it is all sacked on the wheat field as it comes from the threshing machine. When in Portland, Ore., last winter, I went down to the river several times, and it seemed slow work the way the grain is handled. A steel ship had been two weeks taking on her cargo. She was a beauty, the handsomest sailing boat I ever saw. It would take her eleven months to make the round trip from Liverpool. Neither captain nor crew were in any hurry to get away. The lake dash in loading a boat would not have been appreciated by them after being afloat five months. In Portland, surrounded by a stoney country, it is surprising that the streets are paved with stone that comes from Europe. They come as ballast in the boats which take grain back. It is claimed that great coal fields exist along Puget sound. In that country of real estate sharks it is not well to believe too much, but if there are coal fields of any consequence there is certainly room for lake hustling in carrying coal to San Francisco. Fortunes will be made in that trade which is without practical limit.

The city council meets for the first time since its vacation next Monday, and the order from the war department to remove Canal street bridge will then be presented. Of course, nothing will be done. It is too much too expect of the city council. There is only one man in the council—his name is Cullerton—and Cullerton is against the removal of the bridge. There are sixty-seven other fellows, but they don't count against the one. The corporation counsel will doubtless be ordered to fight the United States in its claim to have control of Chicago river, and the case will go into the courts. In five years it will be somewhere on the docket of the supreme court. All this time Canal street bridge will have been an obstruction to navigation and of no help to street travel. Mayor Cregier built a fitting monument to misrule when that bridge was constructed.

Recently the marine interest here labored with great seriousness to defeat the use of government piers by private individuals, and Congress last winter passed a law prohibiting it. This summer the government has rebuilt the piers at the mouth of the harbor. These piers used to be so that boats could tie up to them, but now being planked over there is nothing to fasten to. It is the only place in the harbor to make up tows, and while barges and steamers are waiting they can now find no place to go. Capt. Marshall, the government engineer, was appealed to and asked to drive piles every fifty feet where vessels might tie. He replied that the law prevented him from granting any such occupancy of government piers, but if the vesselmens wished to appeal to the secretary of war for permission it might be well to do so. This will now be done. Boats will be placed at a great disadvantage if they are driven away from the piers at the mouth of the harbor.

F. W. Wheeler, the Bay City shipbuilder, has gone to New York in relation, it is said, to the new steamer for the Graham & Morton line. The contract has not been signed but the details are well arranged. Mr. Graham takes exceptions to what I said last week about the City of Chicago. He construed it to mean that the City of Chicago was not seaworthy. Nothing of the kind was intended. She is as strong and capable of braving lake storms as she can be made. But the remarks were intended solely as a comparison between propellers and side-wheelers. It is generally admitted by all marine men that the propeller is the better sea boat, and that is the point I intended to make, whether I did so or not.

The marine editor of the Buffalo Express at last admits that the railroads are waging war on the Erie canal. "The canal is doing all it can," he says "but so low have freights been for the past few years, that there is not as many boats as there used to be. The state reports every week show a falling off in canal business, yet all the boats are busy." In that can be found the secret of the course of the railroads. "There are not as many boats as there used to be." This tells the story. The trunk lines are carrying out a plan that is destined to weaken if not destroy their greatest competitor. As the business of the canal falls off, the war upon it in the legislature can be carried on with greater effect. Its appropriations can be cut down by less effort. By keeping rates at a starvation point the building of new boats is prevented. Thus it works both ways to the destruction of the Erie canal. It will be a bad day for the western farmer and for the trade of New York city if these tactics are successful. Railroads have never destroyed canal competition without making up for their losses during the war of extermination. No one who has watched the course of the railroads for several years past can doubt they are bent on driving the Erie canal to the wall, even if it takes many years to do it. But it seems strange for a Buffalo paper to admit it. Earlier in the season they indignantly denied the truthfulness of an article to that effect.

Send 75 cents to the MARINE REVIEW for a Binder that will hold 52 numbers.

## Kingston Harbor Matters.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., Sept. 10.—The propeller Hecla arrived here on Saturday morning with 51,000 bushels of rye. She entered the harbor very slowly but did not escape mishap. She went gently on Point Frederick shoal, where the Algonquin, Rosedale and others have rested in turn. She was lightered, when she floated off without sustaining the slightest damage. This shoal forms a ledge, on the extreme edge of which the boats strike, through keeping too close to the point shore. It is distinctly marked on the chart and surprise is expressed that mariners do not escape it. If range lights were placed in the harbor, however, the entrance would be perfectly safe. All the while men are busy removing shoals in the harbor.

The water in this section is now eight inches lower than it was a month ago. It will begin to rise after the middle of this month.

The Kingston and Montreal Forwarding Company had a busy time last week. Notwithstanding they have many of their barges in the coal trade, they forwarded nearly 200,000 bushels of grain. The Montreal Transit Company is very busy also.

The small vessels will have about another week's idleness before the new barley is ready for shipment. When it comes in this class of vessels will get several loads to Oswego at pretty near as good rates as those received from Chicago here. It will be interesting to note the quantity shipped, because this will, in reality, be the first season after the operation of the McKinley bill.

The pleasure steamers on the river have had a very short season—only about three months. When it is considered that some of these boats cost from \$50,000 to \$60,000, it can be seen that in order to pay they must do a rushing business while the season lasts. Other years the season was about four months.

The tug Pier, built by the Union Dry Dock Company at Buffalo, for New York harbor work at a cost of \$45,000, reached here on Saturday on her way to New York. She was in charge of Edward Gaskin, Supt. of the Union Iron Works, Buffalo, who met his cousin, Capt. John Gaskin, outside manager of the Montreal Transit Company, for the first time in his life. The meeting was an interesting one. Until the meeting they were total strangers.

The 2,600 bushels of grain in the Valencia's cargo that was damaged has been sold and stored here.

The steamer Ontario, which left Oswego for Cuba some days ago, became disabled in a storm. She is now anchored in the Gulf of St. Lawrence, minus her rudder. Tugs will tow her to New York so that she can arrive in time to fill her contract with the Spanish government to carry the mails from Havanna. She must begin Sept. 12.

## No Need of a Convention.

The Duluth News is still advocating the holding of a waterway convention before the next congress meets, but there doesn't seem to be as much of an uprising in favor of the project as there ought to be if the necessity for it is as urgent as the News would have us believe. The Mining Journal's idea, that we oughtn't to be afflicted with any more conventions for the next few months than are positively unavoidable appears to be quite generally accepted as correct by the press.—Marquette Mining Journal.

When everything is in readiness for proceedings before the New York legislature and Congress in favor of a radical enlargement of the Erie canal, so as to provide a deep waterway between the lakes and seaboard it will be time enough to hold another convention of lake interests. Twenty-foot navigation throughout the entire chain of lakes is now assured beyond any doubt. There is no need of a convention to have Congress appropriate sufficient funds for the dredging that remains to be done in the St. Clair and Detroit rivers, so as to have these channels conform to the dimensions of the new Sault lock and Hay lake channels.

Every fraction of a knot that is added to the speed of the ocean flyers is attained at the sacrifice of a portion of the space allotted to freight. In some of the more recent vessels the encroachment of the machinery upon the cargo space is surprising. Until recently 25 to 28 per cent. of the space within a vessel was considered a proper allowance for the machinery, but in the City of New York and the City of Paris the engines, boilers and coal take up 35 per cent. of the vessel, while the builders of the Teutonic allotted 43 per cent. of the room to motive power. The Scot, a swift new vessel built in England for the South African service, gives up 35 per cent. of the entire space to machinery.—American Shipbuilder.



## Record of Speed and Big Cargoes.

[Masters or owners are invited to report improvement on this list.]

Iron ore: Lake Michigan—Maryland, Inter-Ocean Transportation Company, of Milwaukee, 3,322 gross, or 3,737 net tons, Escanaba to South Chicago, draft 16 feet 6 inches; E. C. Pope, Dry Dock Navigation Company of Detroit, 3,221 gross, or 3,608 net tons, Escanaba to Ashtabula, draft about 16 feet. Lake Superior—E. C. Pope, Dry Dock Navigation Company, of Detroit, 2,828 gross, or 3,167 net tons, Ashland to Lake Erie, draft 14 feet 6 inches.

Grain: Western Reserve, Peter Minch, of Cleveland, 117,540 bushels of corn, Chicago to Buffalo; W. H. Gilcher, J. C. Gilchrist, of Cleveland, 114,982 bushels of corn, Chicago to Buffalo.

Speed: Owego, Union Line, of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Saranac, Lehigh Valley Line, of Buffalo, Buffalo to Lime-Kilns, 240 miles, 15 hours and 10 minutes, 16 miles an hour.

## Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	\$100 00	\$.....	\$ 77 50
Champion Iron Company.....	25 00	.....	87 50
Chandler Iron Company.....	25 00	37 00	39 00
Chicago and Minnesota Ore Company.....	100 00	.....	100 00
Jackson Iron Company.....	25 00	90 00	.....
Lake Superior Iron Company.....	25 00	51 00	53 00
Minnesota Iron Company.....	100 00	70 00	75 00
Pittsburg Lake Angeline Iron Co.....	25 00	132 50	.....
Republic Iron Company.....	25 00	25 00	27 00
Ashland .....	25 00	.....	53 50
Section Thirty-three.....	25 00	11 00	12 50
Brotherton.....	25 00	2 25	2 75

A few changes are noted in the list of values on iron mining stocks, but no dividends or announcements of special importance can be recorded for the week. Lake Angeline will in all probability pay the usual monthly dividend of \$2 a share, although there is as yet no official announcement of it. A portion of the product of the Lake Angeline mine may remain in stock this fall, on account of low prices in the market and in accordance with the general disposition to bring down little unsold ore. There is some talk of a dividend from the Commonwealth this year, in view of the recent find on the land of this company, which is already being worked very actively and which will increase the company's product to about 150,000 tons this year.

Mr. C. T. Bowen of Ashland who is interested in the Michigan Iron Mining Company, controlling mineral lands on the Messembria or South range, sends the REVIEW some information regarding the property. He says the ore is entirely different to Gogebic ore, being similar to that of the Republic on the Marquette range. "We have a 50-foot vein," he says "and some 20 feet of good ore that assays over 60 per cent. metallic iron and is very low in phosphorus. A sample which I took a few days ago, 7x10 feet, showed 63.70 iron, .062 phosphorus and 5.87 silica, as analyzed by Mr. L. E. Dunham, chemist at the works of the Ashland Iron and Steel Company. The mine is located in Section 22, Town 42, Range 1, east, and is about 12 miles a little east of north from Butternut on the W. C. R. R. We have about twenty men employed and with good machinery intend to drive the work along as speedily as possible, so as to begin shipping ore next season. The railway company promises to give us shipping facilities within ninety days after we have seventy-five or 100 tons of good merchantable ore in sight."

Some important publications relating to the silver and iron mining lands of northwestern Ontario, and particularly the district through which the Port Arthur, Duluth & Western Railway is being built, have recently been sent out from the office of the minister of agriculture at Toronto. They include a large volume on the "Mineral Resources of Ontario" and the report for 1890 of Mr. A. Slaght, inspector of mines. According to these reports the promoters of the Port Arthur, Duluth & Western Railway claim that they will open this new Northwestern Ontario district within two years, shipping ore from Port Arthur. Ore in the district to be traversed by the Rainy River Railway, a branch of the Port Arthur Duluth & Western Railway which is also under way, will show, the projectors claim, 70 per cent. of pure metallic iron with no objectional substances, titanium and phosphorus existing only in very small quantities.

On Sept. 2 shipments from Ashland aggregated 884,868 tons, of which the Ashland mine contributed 171,270 tons, Aurora

52,789, Tilden, No. 2, 5,179, Tilden 23,044, Montreal, south vein 38,709, Palms 24,502, Sec. 33, Bessemer, 25,132, Carey 57,689, Trezona 15,759, Germania 20,011, Iron Belt 1,506, Mount Hope 57,644, Norrie 187,385, East Norrie 88,403, Fr. Hennepin 14,582, Federal 929, Eureka 11,667, Pabst 62,849, Ruby 913, and Sunday Lake 40,380. The Ludington mine of the Menominee range had on the same date shipped 88,249 tons and the Hamilton 22,201 tons. Shipments from the Vermillion range to Sept. 2 foot up 590,407 tons, of which the Minnesota mine shipped 348,094 tons and the Chandler 242,313 tons.

An electric pumping plant was recently installed at the Hamilton mine. The pump, which is located 1,325 feet below the collar of the shaft, has a capacity of 100 gallons per minute. The pump has a Knowles' water end, and is tested to 1,000 pounds per square inch. The generating plant is located in the Iron Mountain electric light station. It consists of a Thomson-Houston 500 volt dynamo, developing 80 horse power. The efficiency of the plant is guaranteed to be 77 per cent.

Last season the Humbolt mine of the Marquette range shipped about 30,000 tons of ore, but work on the property was a few days ago cut down to a force of about half a dozen men. At the Foxdale, just west of the Humbolt, a party of Ishpeming men, who recently secured a lease from Don M. Dickinson, owner of the fee, have struck ore which is a continuation of the Humbolt ore, and they are expecting big returns.

A report from the Michigan commissioner of mineral statistics for 1890, states that one half of the iron ore produced in the United States during that year was mined in Michigan, the amount being 7,185,175 tons, valued at \$41,000,000. Eighty-two mines were operated in the state in 1890, and seventeen blast furnaces producing 225,587 tons of pig iron.

Four mining companies, to be known as the Nibiwa, Wibi-gon, Wenona and Minosin, were incorporated at Tower, Minn., recently. They each have the same incorporators, namely: William H. Fisher of St. Paul and John H. Upman, Daniel H. Merritt and William A. Barr of Duluth. The capital stock in each company is \$50,000.

At the Crystal Falls mine, a property named for the district in which it is located, development work on a recent find has been progressing favorably for some time past and preparations are being made for large shipments next season.

## Speed Increases the Draft.

The Menominee Transit Company's steamer Briton, which struck Gull island reef, Lake Michigan, last week, was drawing, with the water which she carried, 18 feet 5 inches forward when she entered at Port Huron, for the purpose of lightering a portion of her cargo, before proceeding down the rivers. As the boat entered on the Gratiot ranges and did not find bottom at any time on her way into the rivers, the claim in some quarters that there is not sufficient water on these ranges will not hold. The Briton was, of course, under check on account of her condition, but it is to be expected that boats navigating such channels will run under check. A vessel drawing little more than 16 feet might fetch up in the same locality when running at a high rate of speed, as there is no doubt of the tendency toward deeper draft when speed is increased.

The Briton was not as badly damaged as had been expected. She had a big hole in her bottom forward, for repairs on which it was necessary to remove nine plates and a number of frames, and she brought down several large boulders from the reef on which she struck. The stones will probably mark the driveway through one of the lawns at the summer residence of Mr. M. A. Hanna, and may serve as an object lesson for some of the members of Congress who happen this way and desire to be informed in the matter of obstructions to lake navigation.

Judge Benedict of the United States district court, New York, says: "In a dispute of fact when all the witnesses are equally positive and equally creditable, and one story as plausible as the other the party presenting two witnesses must prevail over the party presenting but one."



# MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

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The books of the United States treasury department contain the names of 3,510 vessels, measuring 1,063,063.90 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The classification is as follows:

Class.	Number.	Tonnage.
Steam vessels.....	1,527	652,922.25
Sailing vessels.....	1,272	328,655.96
Canal boats.....	657	67,574.90
Barges.....	54	13,910.09
Total.....	3,510	1,063,063.90

According to the report of William W. Bates, United States commissioner of navigation, 46 per cent. of the new tonnage of the country was built on the lakes during 1889. This is a percentage greater than the work of the Atlantic coast and western rivers combined, and almost equal to the whole work on the Atlantic and Pacific coast. In 1890 the tonnage built on the lakes is but very little less than that built on the Atlantic and Gulf coasts. Tonnage built on the lakes during the past five years was as follows:

	No. of boats.	Net Tonnage.
1886.....	85	20,400.54
1887.....	152	56,488.32
1888.....	222	101,102.87
1889.....	225	107,080.30
1890.....	218	108,515.00
Total.....	902	393,597.03

Annual tonnage entries and clearances of the great seaports of the world, for 1889: New York, 11,051,236 tons; all seaports in the United States, 26,983,315 tons; Liverpool, 14,175,200 tons; London, 19,245,417 tons.

*Tonnage passing through Detroit river during 234 days of navigation in 1889, amounted to 36,203,606 tons. Ten million tons more than the entries and clearances of all the seaports in the United States, and three million tons more than the combined foreign and coastwise shipping of Liverpool and London.*

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 234 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014.

Entered at Cleveland Post Office as Second-class Mail Matter.

ON the 19th inst. a special meeting of the board of supervising inspectors of steam vessels will be held in Washington, for the purpose of inquiring into the advisability or necessity of having line carrying projectiles and the means of propelling them aboard passenger steamers, in accordance with the law of the last Congress on this subject, which met with vigorous opposition from lake interests. The law was suspended for the present season, as regards the lakes, but it is in force on the coast and will apply to the lakes next season unless it is appealed as a result of the coming investigation by the treasury department. There is no need of repeating to lake vessel owners and practical seamen the reasons why these appliances would be of no use aboard vessels here, but it is absolutely necessary that a united protest against their adoption be sent to the board of supervising inspectors. The Lake Carriers' Association will be represented at the investigation by Secretary Keep, but it is necessary also that action be taken by other organizations as well as individual managers of vessels. Although the rulings of the board of supervising inspectors have confined the requirements of the law to passenger vessels only, Mr. Keep, who has given the subject careful attention, says that if the law is not repealed with regard to the lakes, he feels certain that the companies making the guns will push its adoption on all steam vessels and tow boats, as the law may be construed to apply to vessels other than those engaged in the passenger trade.

If anything is to be done towards an exhibit representative of the lake marine at the World's Columbian Exposition, it would seem that preparations should begin shortly, as many other interests of a similar nature already have plans well under way. The transportation department of the exposition is well organized and it will be one of the features of this great enterprise.

THE City of New York has again beaten the best eastward passage on the Atlantic, having just made the voyage from New York to Queenstown in 5 days, 22 hours and 50 minutes. With the aid of a special train over the Canadian Pacific from Victoria, B. C., the mails from Yokohama, Japan, were delivered at Queenstown in twenty days.

A TRAIN of cars 900 miles long would be required to carry 3,754,662 gross tons of ore shipped from Escanaba during 1890. The shipments were made up of eighty different kinds of ore, and the shipping docks, although now having a capacity for 150,000 tons, were crowded in caring for such a product.

## Relics of the Gogebic Boom.

Reports from New York and Wisconsin courts, recently, tell of big mining cases involving operations on the Gogebic range. One of the cases decided some time ago, that of James Corrigan of Cleveland against Stephen W. Dorsey of political fame, gives Mr. Corrigan judgment for \$30,000. This action, like a number of others that are still dragging in court, grew out of the failure of Moore, Benjamin & Co. Dorsey with a son of Gen. Grant and other New Yorkers were to take up a large area of mineral lands on the Gogebic range, float bonds for the building of ships and otherwise cut a wide figure in connection with the iron mining business of Lake Superior when the Gogebic crash came on. They failed to carry out the visionary plans that were based on the bonded arrangement and Capt. Nathaniel D. Moore, John E. Burton and other leading promoters of the big schemes went to the wall. These suits are little more than reminders of the Gogebic failures. Dorsey had given security to Mr. Corrigan for Moore, Benjamin & Co. on ore handled by Mr. Corrigan, and the judgement secured a short time ago is based on this transaction. Another case heard of recently is that of the American Loan & Trust Company against the Gogebic Development Company in the United States circuit court for the western district of Wisconsin.

In the suit of the trust company against the Gogebic Development Company it is claimed that in 1887 the defendant executed to the plaintiff a trust deed on a large amount of valuable mining property, owned it to secure the payment of 2,000 of its bonds at \$1,000 each, amounting in all to \$2,000,000. This mortgage provided for the payment of 6 per cent. interest, semi-annually, and the principal in 1907, and also, in case of default for six months in the payment of any installment, and on demand of the owners of the bonds to the amount of at least \$160,000, the mortgagee should declare the whole amount of principal and interest due, and proceed to foreclose. The complainant alleges that the defendant sold the whole \$2,000,000 of bonds at par and that there have been such default and demand. The answer admits the execution of the bond and mortgage, and that 500 of the bonds, amounting to \$500,000, were sold and negotiated by the defendant, but denies that the rest of the bonds were sold. The latter, it alleges, were wrongfully and fraudulently parceled out by the former officers of the company without any value being paid therefor, and it is alleged that the present owners of them had full knowledge of such fraud.

The Pennsylvania Steel Company last week started its new \$3,500,000 plant at Sparrow Point, near Baltimore, where Cuban ore will be used in great quantities. One of the first orders was for 10,000 tons of steel rails from the Pennsylvania railroad.



### Another English Criticism of the Whalebacks.

The Shipping World of London says: "The Charles W. Wetmore, the American whaleback—a new type of cargo steamer—that arrived in the Mersey on the last week of July, is described as being practically a tube. She has done good work on the American lakes, and has dared the dangers of the Atlantic. It is said of her that she offers but little resistance, and the experience of the voyage across the Atlantic is that she rolls but little in heavy seas. The craft is a near approach to a submarine vessel, and her safety, in the absence of freeboard, will lie in keeping the center of gravity of the ship and cargo, below the center of buoyancy. Laden with a homogeneous cargo, the vessel will, no doubt, 'roll but little in heavy seas,' but this, instead of being proof of seaworthiness, may be, and probably is an evidence of stability so infinitesimal that a heavy gust of wind abeam and a sea breaking on the turrets may lead to capsizing. We earnestly hope that the vessel is regarded as a submarine boat, and her weights disposed accordingly."

### Comparing Lake Built Vessels on the Coast.

Samuel Holmes of New York, one of the owners of the steamers Mackinaw and Keweenaw, built by F. W. Wheeler & Co. of West Bay City for ocean service, takes exception in the American Shipbuilder to some comparisons made between these vessels and the whalebacks. In doing so Mr. Holmes presents a few interesting points regarding the work of the Mackinaw and Keweenaw in the Atlantic trade. The Wetmore had but nineteen men all told to Liverpool and he says that the Mackinaw would require but twenty men on a similar voyage. The consumption of the Wetmore is claimed to be 12 tons for 24 hours; the Mackinaw's average consumption over a trip from New York to Progresso and back was 14.76 tons per 24 hours. The Wetmore carries about 2,600 tons of 2,240 pounds; the Mackinaw carries 3,800 tons of 2,240 pounds.

### Tunnel Celebration.

The Grand Trunk tunnel under the St. Clair river at Sarnia will be formally opened on Sept. 19. Sarnia, on the Canadian side, and Port Huron, on the American side, will give up the day to celebration and enjoyment. The arrangements now being made for the opening include a banquet in the tunnel, at which President Harrison, many of the state governors, the governor-general of Canada, Sir Henry Tyler, president of the Grand Trunk Railway, and other Grand Trunk officials are expected to be present. The tables will be laid on the boundary line, and during the entertainment and banquet the Thirteenth battalion band of Hamilton will play a programme of music. On the Canadian side the band will play "God Save the Queen" and on the American side "The Star Spangled Banner."

### Cleveland Matters.

Mr. M. A. Bradley, vessel owner, was recently elected president of the State National Bank, one of the leading financial houses of the city.

A place is given to the Goodrich Line twin-screw steamship Virginia in the Record of American and Foreign Shipping, September supplement.

Mr. J. H. Wade's steel yacht Wadena, building at the yard of the Cleveland Ship Building Company, measures 124.16 tons gross and 74.81 tons net.

### Wrecks and Heavy Losses.

The schooner, Julia Willard, a small boat engaged for several seasons past in the Lake Erie stone trade, went ashore at Avon point on Friday last and it was thought would prove a total loss, but Capt. C. E. Benham of Cleveland succeeded, after some difficulty on account of bad weather, in releasing her Wednesday. Two of the boats wrecked in the storm of a week ago, the schooners Pomeroy and British Lyon, have since been taken into port and will be repaired.

The schooner Persia, a small Canadian craft, foundered near Picton, Ont., Monday. She was stone laden from Kingston to Toronto, commanded by Capt. David O'Hagan, and owned by D. W. Allison, M. P. and the captain.

### In General.

The wreck of the scow Hanna Moor, which lies 200 feet out from the Flint & Pere Marquette dock at Port Huron, right in the way of vessels, is to be blown up by dynamite.

Wrecker Falcon has finished the work of placing casks in the hold of steamer Kasota, sunk in the Detroit river, and will now raise the boat in a few days if the pumping operations can be carried out successfully.

Two Harbors' ore shipments were on Sept. 1 only 42,326 tons less than shipments on the corresponding date in 1890. The movement from that port during August, 202,443 tons, exceeded all previous records for a single month.

The American Steel Barge Company has ordered material for four steamers and two barges. The vessels will be of uncommon size for whalebacks, 300 feet in length, designed for lake traffic exclusively. The material ordered will amount to \$750,000.

The National Boiler Maker's Union has notified boiler manufacturers that the union will demand that eight hours constitute a day's work on and after May 1 1892. A circular from the employers is said to propose organization for mutual protection.

A joint committee of the Detroit board of trade and the merchants and manufacturers' exchange, which organizations are agitating the matter of a 21-foot channel from one end of the lakes to the other, has decided to correspond with similar organizations in all the large lake cities and get their views on the expediency of calling a convention to discuss congressmen's recommendations in regard to a 21-foot channel.

Colgate Hoyt says a line of whalebacks between New York City and Cuba is not only a possibility, but a probability. General Manager Hughes, of the New York & Cuba Mail Steamship Line, is now at West Superior in consultation with Capt. Alex. McDougall and is considering the advisability of contracting for several of the craft. Mr. Hoyt is of the opinion that they can be built at West Superior and taken over the St. Lawrence rapids, as was done with the Colby and Wetmore.

The Buffalo Courier says of the big grain cargoes carried recently by steel boats: "The Western Reserve delivered 117,540 bushels of corn here, which is the largest grain cargo ever carried on the lakes, and the largest ever brought to this port. The next largest cargo was that of the W. H. Gilcher, 114,982 bushels of corn delivered at Erie this season. The largest cargo previously delivered at Buffalo was brought down on the America last September, 111,507 bushels. A comparison of dimensions and drafts will be interesting in this connection. The Western Reserve and Gilcher each are 318 feet long and 41 feet in beam, and the America is 293 feet long and 40 feet in beam. The Western Reserve was drawing an average of 15½ feet on arrival, and the America a trifle over 16 feet. Although of similar dimensions, the Gilcher's machinery is lighter than the Western Reserve's. The Gilcher was drawing a trifle less than 15½ feet when she carried 114,982 bushels from Chicago to Erie."

### Affairs in Admiralty.

In the United States district court, eastern district of New York, a short time ago, a longshoreman brought action to recover for personal injuries caused by falling from a ladder while going down into the hold of a steamer. The testimony showed that the libellant was employed by a regular stevedore, who had contracted to load the steamer independent of the owners or master. Access to the hold of the steamer from the deck was provided for in the construction of the ship by a fixed iron ladder, built into the foreside of the hatch. At the time of the accident a wooden ladder, some 20 feet long, had been put down from the deck to the hold, and the libellant, when going down the ladder to his work in the hold, stepped upon a rung of the ladder which broke under him, whereby he was precipitated into the hold, and suffered injuries, to recover for which his action was brought. There was no positive evidence in the case as to who put the wooden ladder down into the hold. In the absence of evidence it was presumed that the wooden ladder had been put in by the stevedores, and the court held that as the ship had furnished proper access to the hold by the permanent iron ladder she could not be held liable for the accident. "The fatal defect of the libellant's case," said the court, "is that it is not made to appear that the defective ladder was furnished by the ship, while it does appear that a safe ladder was furnished, which the libellant declined to use."



### Erie Canal Must be Enlarged.

After re-printing from the REVIEW an interview with Capt. Alexander McDougall about Canadian canal improvements along the St. Lawrence river and the demand in this country for a radical enlargement of the Erie canal, so as to provide a deep-water connection between the lakes and the seaboard, the Maritime Register of New York, one of the leading shipping publications of the world, treats the subject in this way from a seaboard standpoint:

"The prospect of immense exports of grain from the United States is very pleasing to the people of this country. It means great prosperity and a revival from the gloomy commercial conditions of the last ten months. But it should also serve to call attention to the routes by which this abundant harvest is to be got to the seaboard, and to the facilities of transport which ought to be secured in order to turn trade in our favor when Europe is not so absolutely dependant upon us, as at present, for food supplies. For this port especially is the subject of moment. New York has seen the trade of great ports like London and Liverpool threatened by rivals, and its own position is not so absolutely secure that it can neglect to offer additional facilities to prevent growing ports from enticing trade to their wharves. The larger area from which the great harvests are gathered gives other seaports advantages of nearness of vicinity which cannot be overlooked. As one business brings another, grain shipments will bring other kinds of shipments to these ports. It is not that New York can expect to take all the increasing export trade, but that it may hold its proportionate share of this increase that it behooves it to take steps to secure the position. It has the means at hand, if an effort is made to handle them rightly. The Erie canal helped, as much as geographical position, to make this port the leading one of the country. And despite all the great railroad facilities now centered here, the Erie canal is yet almost as potential as ever in helping New York to hold the position of the commercial metropolis.

"The carriage of a steamer load of grain from Duluth to Liverpool without breaking bulk is one of the most important events in the history of trade routes. It opens up possibilities that may bring vast changes in our commercial movements. It has proved the practicability of a deep-water route from the Great Lakes to the sea, from the great western cities direct to Europe. Can it be said that this is of no great importance, that it portends nothing to the seaboard cities? If the route followed lay entirely in the United States some gratification might be felt, but from the lakes to the seaboard it passes through Canadian waters, and whatever advantage of control there is goes to the Dominion. That this could be changed, that New York can hold control is obvious with such a means in possession as the Erie canal. That waterway must be enlarged and placed in a condition to give deep water from the lakes to the ocean. There is no question to be considered here. The signs are manifest. They point to changes that may not come immediately, but are inevitable. And they mean as much in loss of business for other places as well as New York, unless their warning is heeded."

### A Visit to Foreign Ship Yards.

"Extravagance in the construction of American ships," says Mr. Charles H. Cramp, one of the members of the Philadelphia firm of shipbuilders, "is the main difference in cost of our war ships over Great Britain, while there is little difference in the cost of first-class merchant ships. What we term clumsiness in British built merchant ships they term solidity." Mr. Cramp has just returned from a tour of the ship yards of Europe. Mr. Irving W. Scott, president of the Union Iron Works of San Francisco, who accompanied Mr. Cramp, says that no one of the great yards visited in Europe is as extensive as the shipyard at Newport News, Va., which is principally owned by C. P. Huntington.

Among other things Mr. Cramp says: "In naval architect-

ure Great Britain it far ahead of any other nation on earth. It is useless to shut our eyes to this obvious fact. And why should it not be so? In ten years—from 1865 to 1875—the British government spent \$100,000,000 in giving an impetus to private shipbuilding yards. It helps them enormously to-day by subsidizing fleet merchant steamers to be transformed into government service in case of war, and by encouraging them with fat mail contracts. All this enables owners of British shipyards to establish plants and make preparations for carrying out big contracts at short notice, which no private corporation in America could afford to do at present. I do not think that we can look for much over twenty knots an hour for the next ten years. The average now is hardly nineteen knots. Consider what it means to increase the speed of a big steamer even one knot an hour. It requires 22,000 horse power to propel a vessel of 5,000 tons nineteen knots an hour. To increase this speed for the same vessel to twenty-two knots an hour would require 36,500 horse power. Of course, I am speaking roughly. Suppose a nineteen-knot vessel could increase her speed one knot an hour, it would mean only a gain of twenty-four knots on a day's run, or 144 knots on a six day's run. This would not lower the present record very materially. But, I repeat, I don't think we shall see a twenty-knot average in the open sea for some time yet."

Mr. Scott was particularly impressed with the German docks. In Hamburg a 5,000-ton ship is docked and undocked in thirty-two minutes. The French search lights, he says, are the best in the world. In making lenses the French are ahead of the world. On all British war ships where only one or two search lights are carried the design is French; where three lights are carried one is of English design, and where four lights are carried three are French and the fourth is English.

Notwithstanding the result of the nickle-steel tests in this country, the British still hold to compound armor. They say that they know what compound armor is, that they can answer for it, and as for nickle-steel they are unable to handle it in thicknesses exceeding four inches without its cracking.

### Triple Screws.

Respecting the propriety of using triple screws in a vessel W. H. White, chief constructor of the English navy said, at a recent meeting of the Institution of Mechanical Engineers, that some years ago the British admiralty went into this question and came to the conclusion that there was not a balance of advantage in the three-screw over the twin-screw steamer. In the case of the Blenheim, now building the horsepower of which was 20,000, the difficulty of variations of power was met by having an after and a forward set of engines on the same shaft. The probability of these engines getting out of line while uncoupled was, however, a contingency, but this they hoped to meet. Experiments with large engines working at low powers showed that there was less waste than was generally imagined. The working of such vessels at low powers necessitates the maintenance of a very large reserve of power. Should the ordinary speed of a fleet be 8 knots, the speed of a ship, sufficient to enable it to keep station, might have to be 10 or 11 knots. The boilers, therefore might all the while be required to develop twice as much steam as was really being used.—The Engineer.

The bureau of steam engineering is now engaged upon a set of drawings of the naval exhibit for the World's Fair. There will be a number of pictures showing the machinery plants of the swift cruisers No. 12 and 13, the battleships and several other modern ships, and two prepared especially for demonstrating the vast stride in marine engine building. One of these illustrates the cumbersome machinery plant of the old paddlewheel Powhatan. The machinery, designed for 1,200 horse power, took up a space 60 feet long and 42 feet high. The other shows the engine and machinery of torpedo cruiser No. 2, recently designed, which are capable of the same horse power and yet the whole plant is confined in a space 13 feet long and 7 feet high, or about one-fifth the space. In her palmiest days the Powhatan would not make over 9 knots, while the torpedo cruiser, if she realizes expectations, will make 23 knots.



### Around the Lakes.

Work has begun on the new elevator at Benton Harbor.

During the month of August 143,896 cubic yards of earth was removed from Hay Lake channel.

Some members of the Canadian parliament are making a vigorous fight on steamship subsidies.

Col. Ludlow expects to have the light and fog signal on Devil's island, Lake Superior in operation about Oct. 1.

John Radigan will succeed W. H. Decker as master of the big lumber barge Michigan, owned by Gilchrist and others of Alpena.

Capt. D. P. Dobbins is at San Francisco instructing the Golden Gate life saving crew in the work of handling one of his life boats.

The steamer Emily P. Weed took 105,380 bushels of corn out of Chicago, Monday, and had a rough time getting through the shallow river.

Toledo and Detroit are certainly contributing more than their share of grain business to the vessels this fall. On Sept. 1 Detroit had shipped about 5,000,000 bushels of wheat and barley.

Chicago newspapers advance the opinion that that port should have a dry dock larger than any of those now in operation there. The present docks are certainly too small for modern vessels and it would seem that a larger plant would prove profitable.

The propeller Western Reserve weighed out 117,540 bushels of corn at the Frontier elevator, Buffalo, which makes her forty bushels over on her big cargo. She took out 3,000 tons of coal. The grain brings her close to \$3,000 while the coal foots up only \$1,200.

Col. Pickands of Pickands, Mather & Co., Cleveland, Harvey H. Brown of Harvey H. Brown & Co., Gen. Colwell, president of the Nickle Plate railroad, Henry Fay of Boston, Alexander Gunn and Ralph Hickox, of Cleveland, made up a party that visited the Vermillion iron range last week.

According to figures compiled by ex-Harbor Master Trowell, receipts of coal by lake at Milwaukee for the month of August were 144,089 tons—105,884 tons of anthracite and 38,205 tons of bituminous. This makes the grand total of coal receipts at that port up to Sept. 1 663,260 tons, of which 483,697 tons were anthracite and 179,563 tons bituminous.

Superior citizens are making a great effort to secure the business of handling Dakota's wheat. Arrangements can not be made for this season's business, as the movement of grain has already begun, but the aim now is to establish Dakota inspection, giving Superior the advantages of a board of trade. Dakota wheat is now graded under Minnesota inspection.

The first stone in the new lock at the St. Mary's Falls canal was laid on Wednesday of last week. There were no ceremonies attendant upon the occasion, as Gen. Poe says that nothing of the kind will take place until the last stone is set in place. The stone bears the inscription, "First stone laid in this lock, Sept. 2, 1891." It is far below the water line and will probably never be seen after the work is completed.

Since 1883 there has been cut in Alger county, Michigan, 255,000,000 feet of pine timber. Of this amount the Chicago Lumber Company cut 60,000,000; Hall & Buell, 55,000,000; Bay de Noquet Company, 30,000,000; Charles Johnson, Rock River, 30,000,000. The remaining 80,000,000 was distributed in small amounts to a number of different companies. It is estimated there is 150,000,000 feet of standing pine left, but this will soon be gone if the record of the past five years is kept up.

From Toronto it is said that "Marine Engineer Redway of that city has constructed a model of a new style craft which he expects will revolutionize the lake carrying trade. He claims it is far ahead of the whaleback vessel. Redway's boat is fashioned after an Indian canoe. It has a flat bottom except a keel at the stern to accompany the rudder. The hull is somewhat after the style of the whaleback. There are no bulwarks. It has a ram prow instead of a hog snout prow like the whaleback. It is intended to form a syndicate to build a line of these vessels."

The schooner Owasco is on her way to Portland, Maine, from Sandusky, with a cargo of mineral ore. On going through the canals from Kingston to Montreal, the Owasco had to remove her topmasts, on account of telegraph and telephone wires

being stretched across the canals. Permission had to be received from Ottawa to raise the wires far enough to clear her lower masts, and in this way the schooner proceeded on her trip. She also had to lighten part of her cargo at Kingston and reload at Montreal. The Owasco is owned by J. M. Jones & Son, of Detroit, and Capt. Alonzo Carter, her present master.

David Carter, general manager of the Detroit & Cleveland Steam Navigation Company, received recently from the English Lloyds and other insurance companies the adjustment papers in the case of the collision between the steamers City of Detroit and Kasota in July 1890. The claim for damages to the City of Detroit was allowed in full, and a check for the amount accompanied the adjustment papers. The City of Detroit was insured for seven-eighths of her full value, and the check pays for that proportion of the damages. The percentage of the loss of the Kasota assumed by the underwriters of the City of Detroit was paid some time ago.

A couple of years ago the common council and mayor of West Superior petitioned the light-house board at Washington to have the main channel of that harbor buoyed and lighted for the guidance of vessels. Commander Heyerman and Col. Ludlow of Detroit were instructed to examine the ground, and in March, 1890, reported that pile cluster lights were the most feasible, and buoys were out of question, as they were liable to be carried away frequently. They accordingly recommended that six lights be advantageously placed in the channel. Congress failed to make the necessary appropriation, and West Superior had to go without her lights. Once more the mayor and the council of the city are petitioning the board, and they promise to persevere until they get what they want.

### New Type of Boat and Triple-Screw Engines.

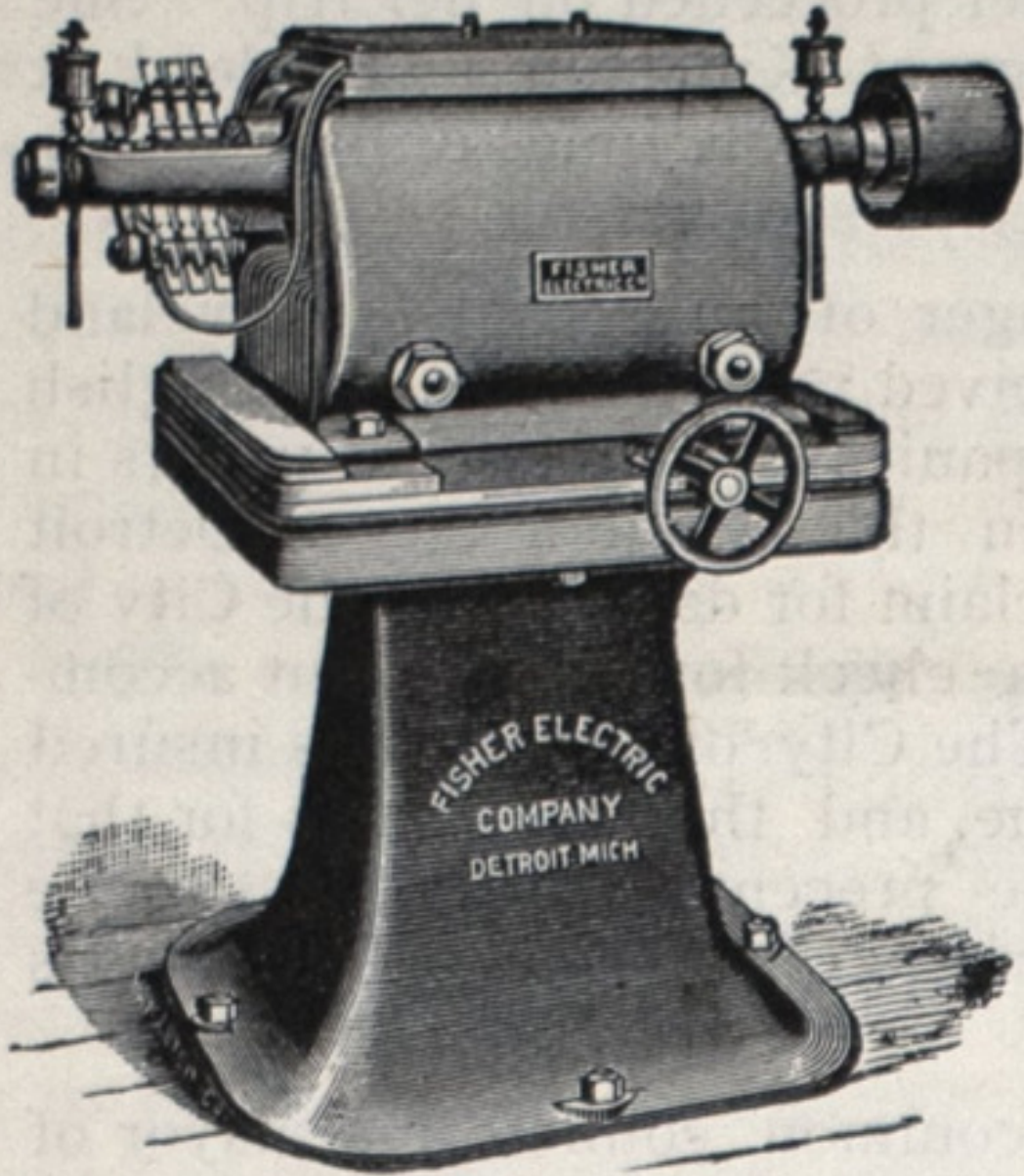
A recent issue of Engineering describes with illustrations the awning-decked steamer Wai, a boat only 90 feet long and drawing but 3 feet 3 inches when loaded, to which Dunsmuir & Jackson, engineers of Glasgow, have applied triple expansion, surface condensing engines. The boat is intended for river service and was constructed, as regards both hull and machinery, with a view to getting the best results under light draft. The principle in her triple-screw engines is entirely new. The engines are placed athwart the vessel and each of them is joined direct to its own crank-shaft and propeller. The connections between the engines are made by two side rods, acting at right angles to each other, and they are so arranged as to act as a balance to the low-pressure piston and other working parts. They are so constructed as to give the crank-shafts free play and movement in working, and to wear out of line if so inclined. This combination gives all the advantages that are due to the three cylinders and ratios of expansion, with cranks set at equal angles. The high-pressure cylinder is 9 inches, intermediate 14½ inches and low-pressure at 25 inches, each having a stroke of ten inches. The working pressure is 200 pounds to the square inch. The propellers, made to suit the light draft, are of gun metal, and are each 2 feet 6 inches in diameter, having 3 blades. The centre crew is placed in the usual aperture in the stern, and the two outside propellers a few feet further forward, the blades overlapping those of the centre screw more or less as may be thought desirable. On account of the high speed of the engines—upwards of 300 revolutions a minute—it was preferred to work the pumps by separate engines. The vessel was built full with bluff lines but makes 11 miles an hour.

Sir James Kitson, in his account of his travels in America last year, describes the Pocahantas coal mines, in West Virginia, as the most wonderful in the world. The company owns 300 square miles of coal lands, and produces yearly 4,000,000 tons of coal. The veins are 12 feet thick, and the amount per acre is estimated at 12,000 tons. The coal is taken to Norfolk, Va., by rail, and is shipped thence to New York where the Atlantic steamers are supplied mainly with this coal.

LAST OF THE SEASON.—September 19th, the last Niagara Falls excursion of the season will be run over the Nickle Plate, Saturday night trip, going, arriving at the Falls early the next morning. Same low excursion rate and ample accommodation in our Pullman palace day coaches and sleeping cars. Ask nearest Nickle Plate agent.



SEE CAPT. PECK'S LETTER Regarding Incandescent Lighting Plant on the Steamer S. R. KIRBY.



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GENTLEMEN:—Replying to your inquiry regarding the operation of the 200 Light Incandescent Plant placed on the Steamer S. R. Kirby, we wish to say that the plant has operated during the season without an interruption and has not cost us one cent. No Lamps have been broken, and we would not be without it. Very truly yours,

**E. M. PECK, President.**

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Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind, or wishing to purchase vessels, are invited to take advantage of the same offer. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 510 Perry-Payne Building, Cleveland, O.

65—For Sale Cheap—Two 10 x 10 Marine Engines with two 4 feet 4 inch wheels; good shafting, heater, boiler, steam pump and connections; or will exchange for small yacht or real estate.

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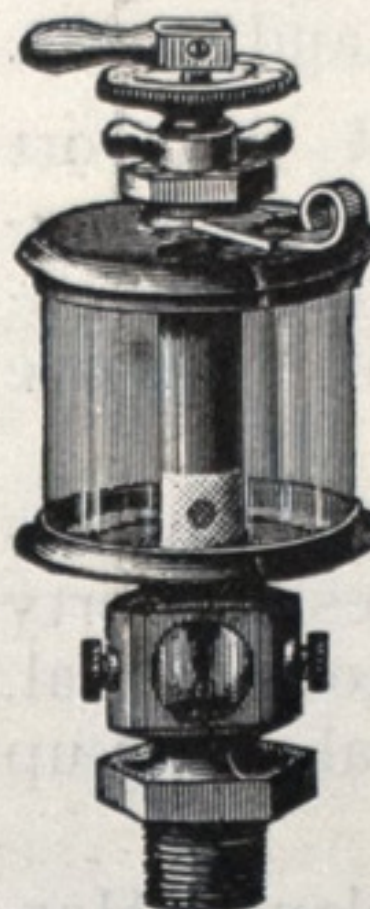
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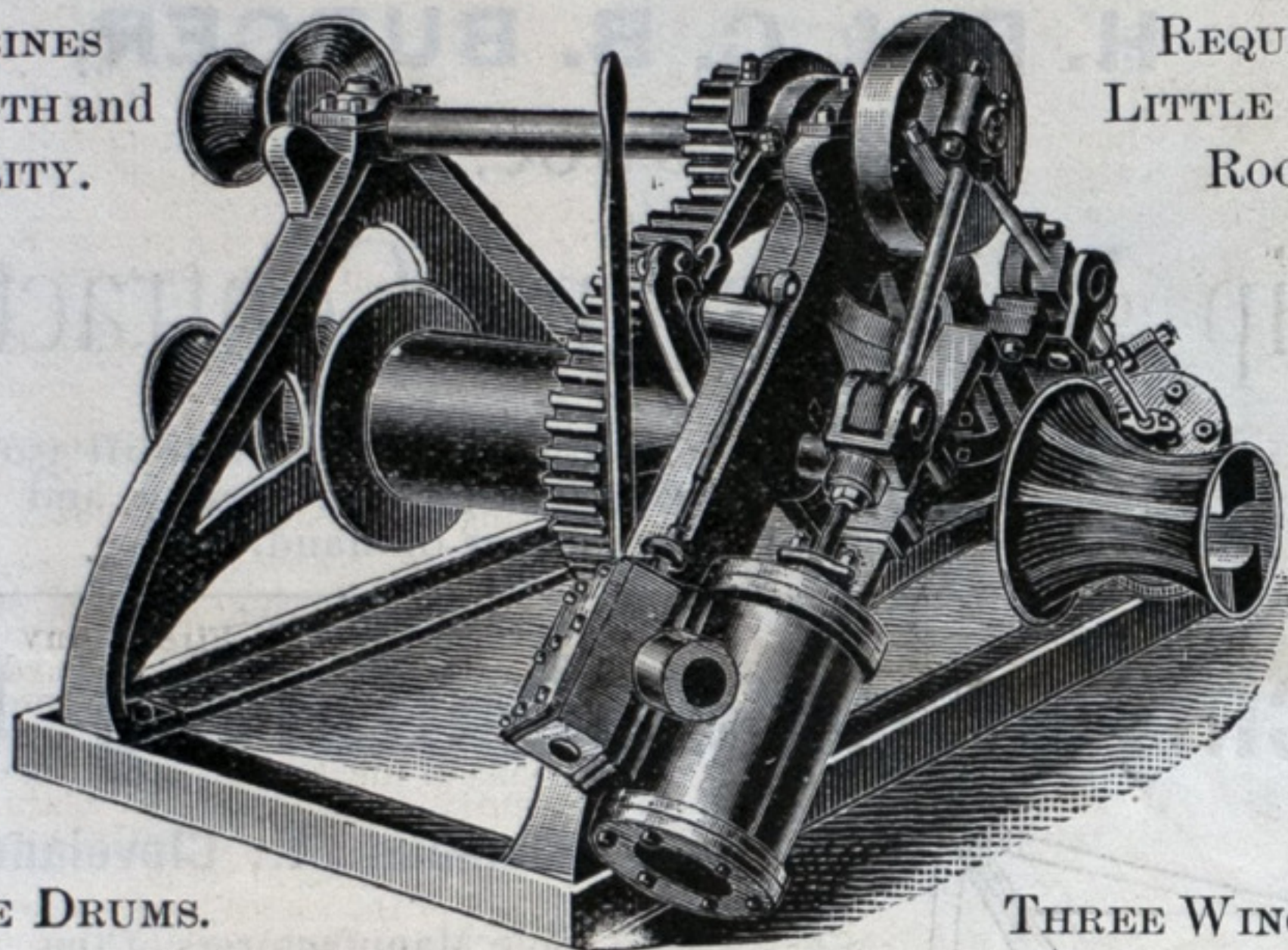
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**TO IRON STEAMSHIP BUILDERS.**—Treasury Department, Washington, D.C., August 5, 1891. Sealed proposals for the construction of a steam-propeller, to be named "Calumet," for the U. S. Revenue-Cutter Service, to be stationed at Chicago, Ill., will be received at this Department until 2 o'clock P.M. of Thursday, Sept. 10, 1891. Bids must be in accordance with the instructions accompanying the specifications, and should be addressed to the Secretary of the Treasury, and indorsed on the envelopes "Proposals for a Steam-Propeller for the U. S. Revenue-Cutter Service." Bidders must state the time in which they agree to complete the vessel. Specifications and plans for the work will be furnished to parties desiring to submit bids upon application to the Department. The right is reserved to reject any or all bids, and to waive defects, if deemed for the interest of the Government so to do. A. B. NETTLETON, Acting Secretary.

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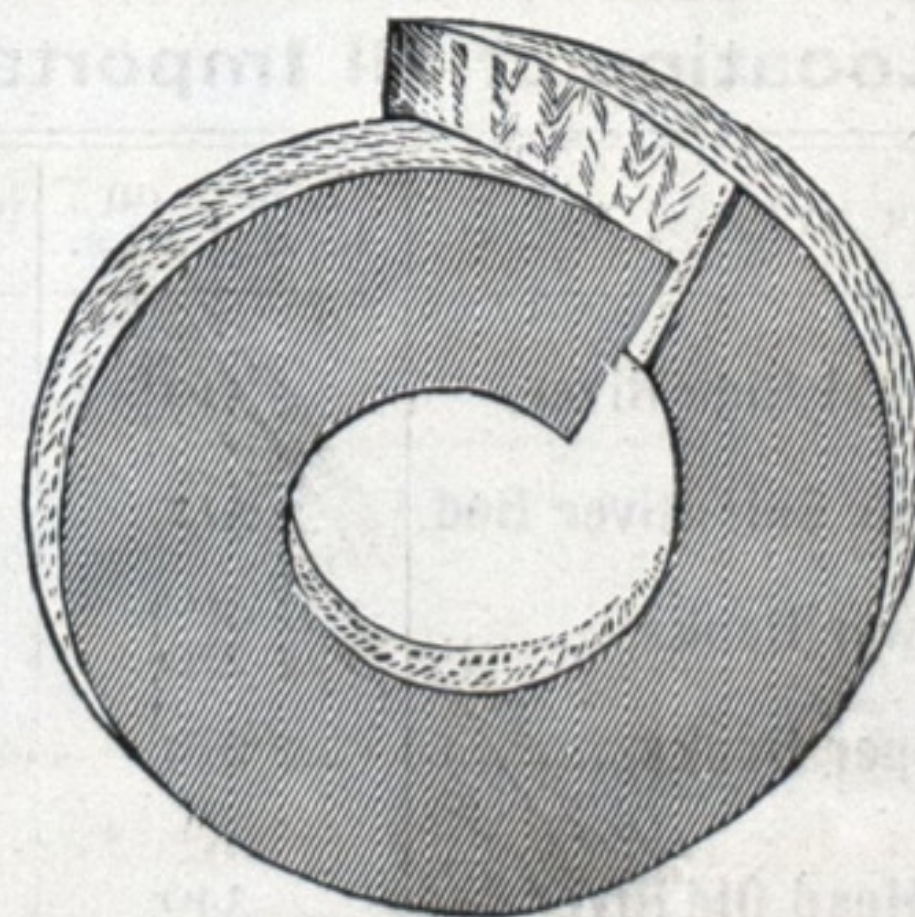
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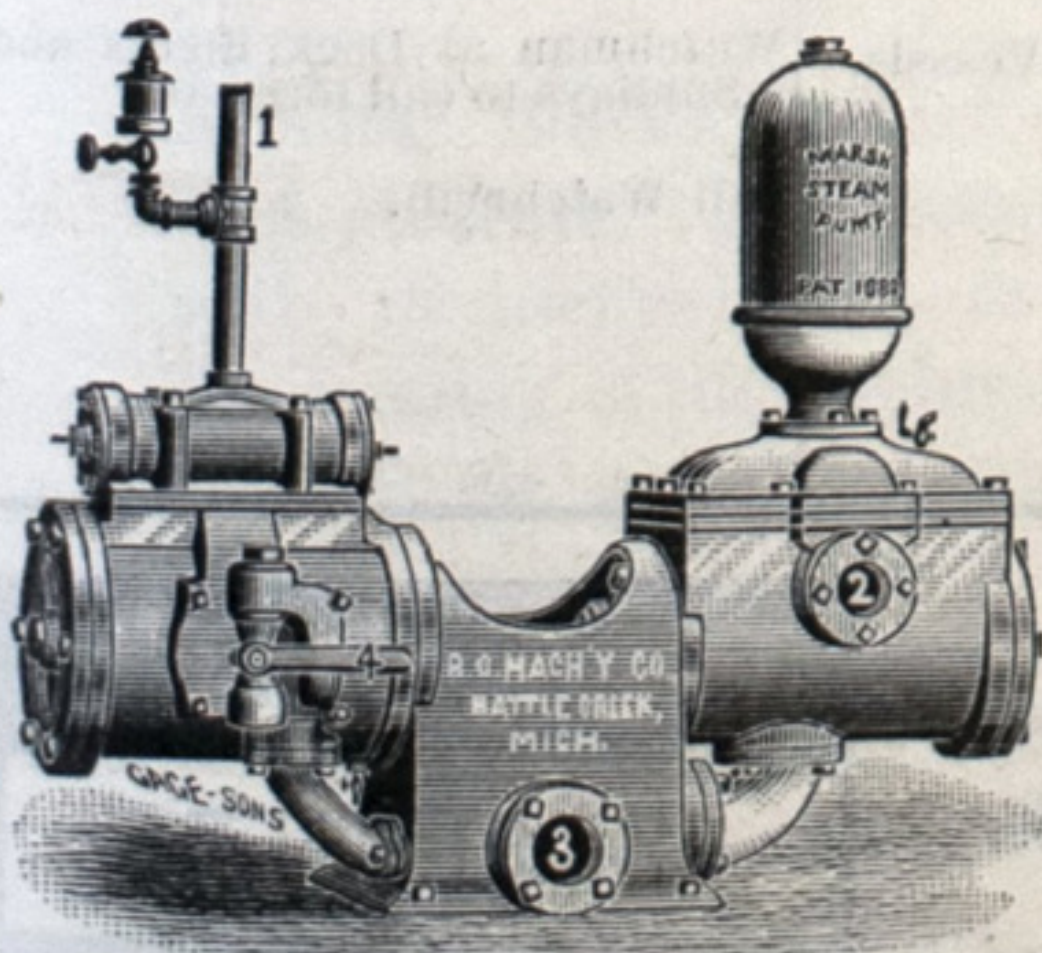
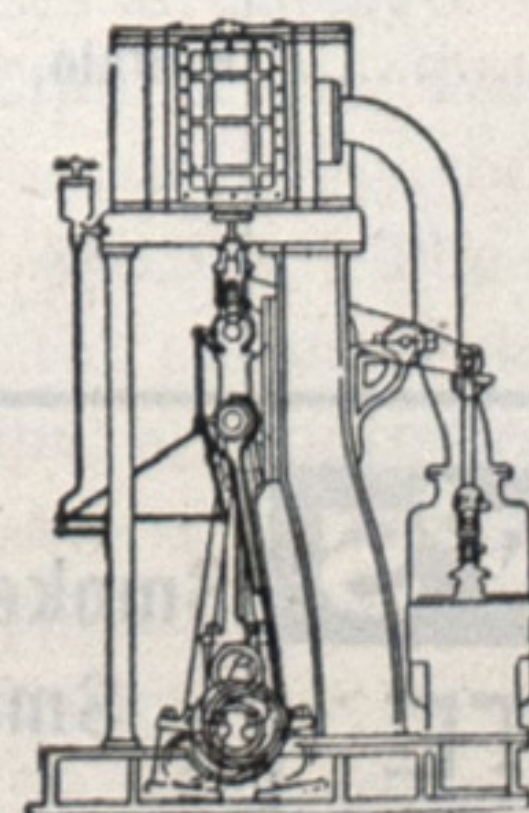
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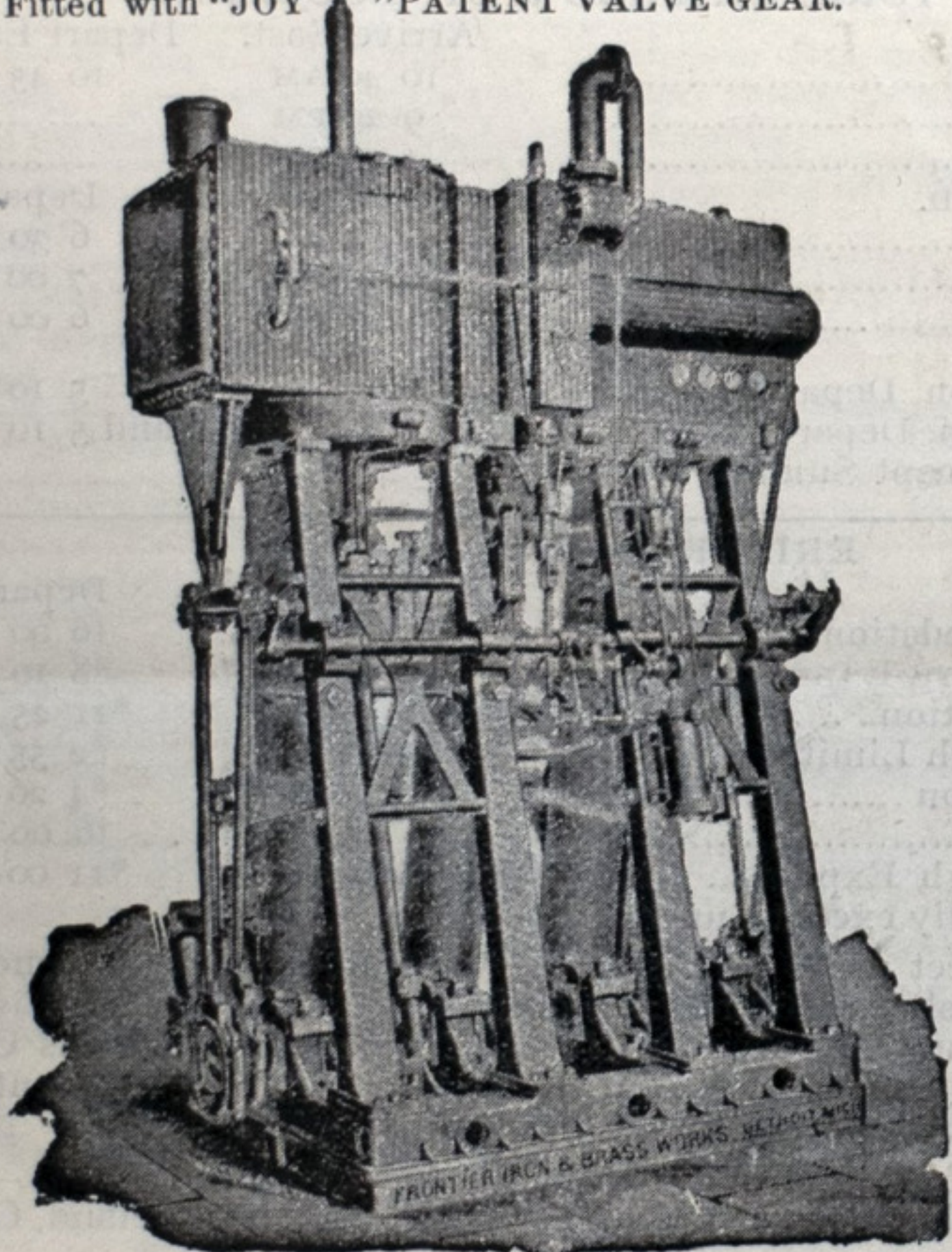
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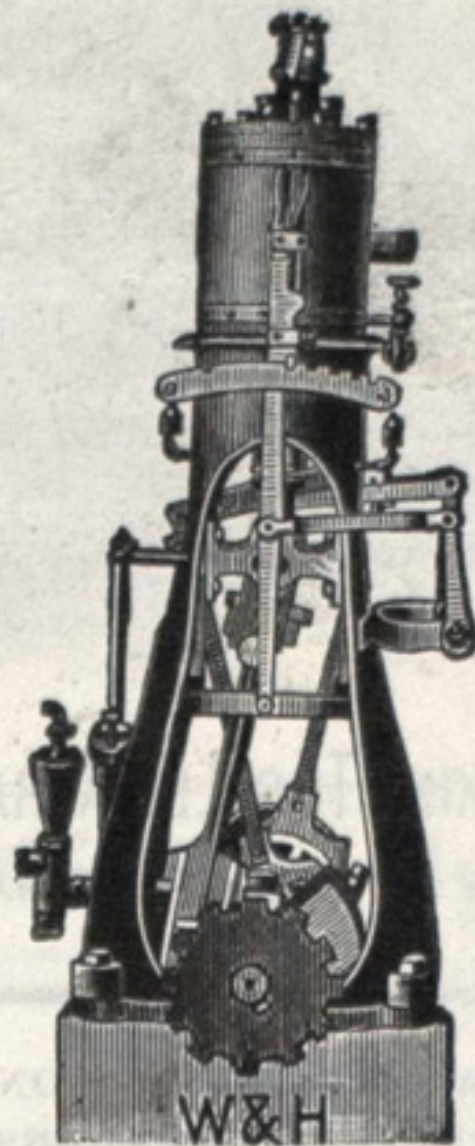
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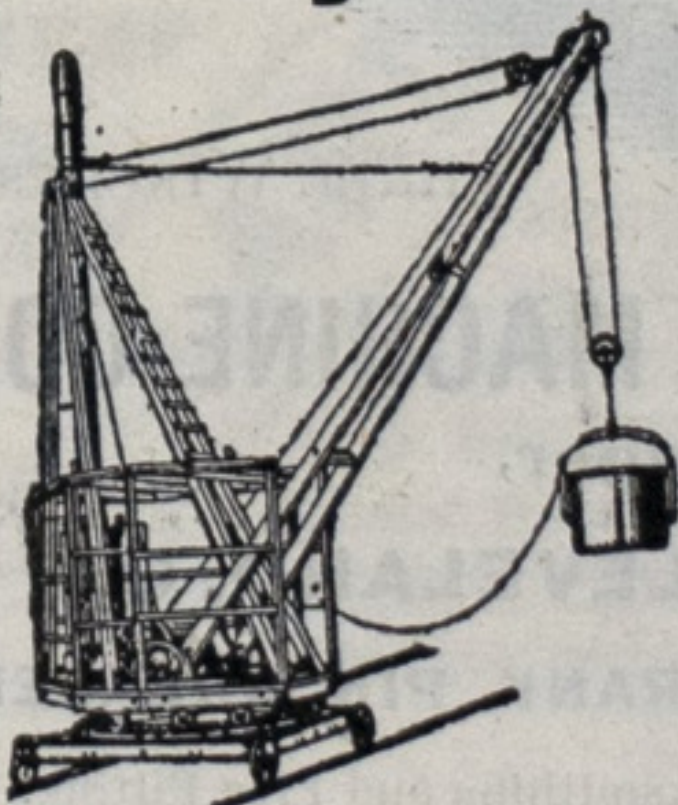
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